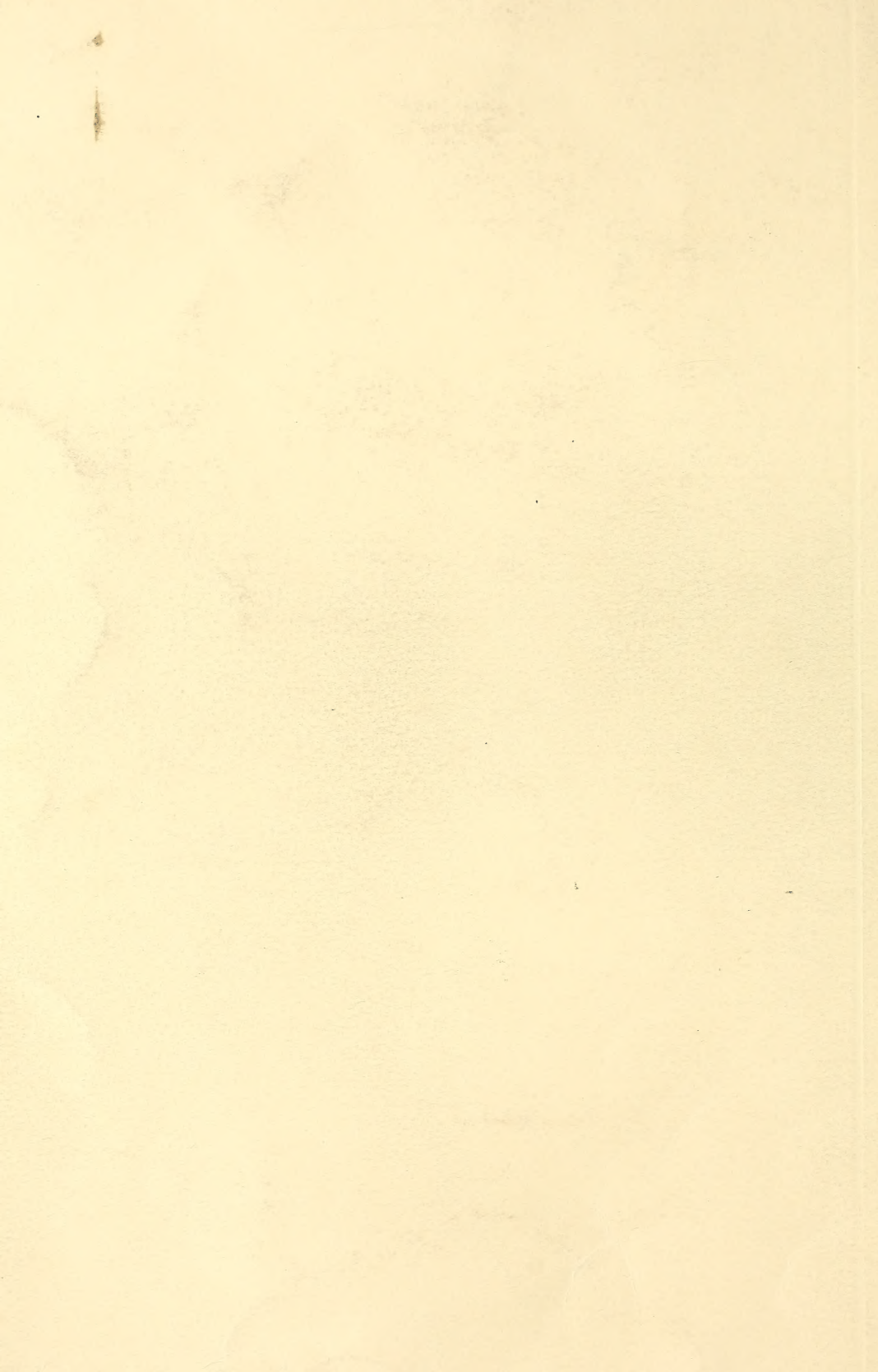


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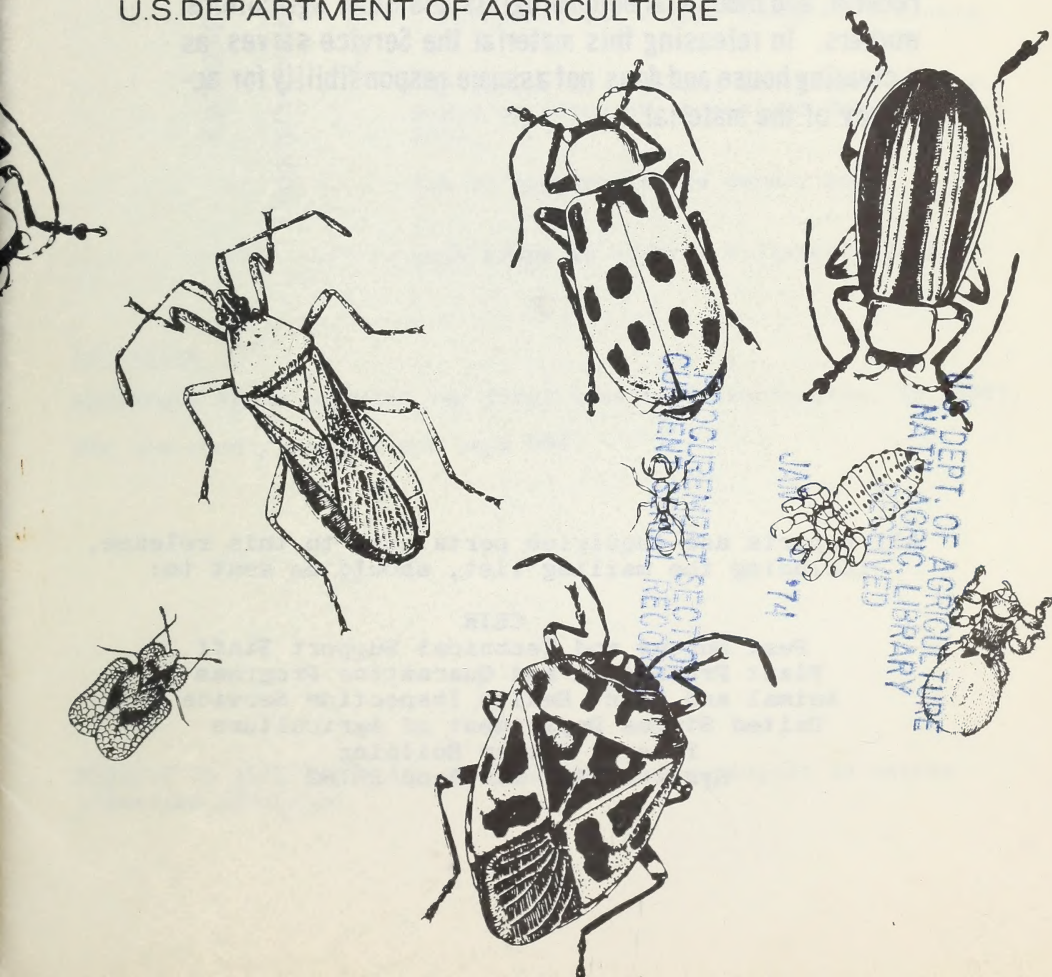


August 17, 1973

Cooperative Economic Insect Report

Issued by

PLANT PROTECTION AND QUARANTINE PROGRAMS
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
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ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
PEST SURVEY AND TECHNICAL SUPPORT STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

CORN EARWORM required treatment on sweet corn in southern New Jersey; second-generation larvae abundant in field corn in southern Illinois, moth flights heavy in north-central and north-east Kansas. CORN LEAF APHID decreased on sorghum in Kansas and corn in Maryland, increased on corn in Maine and New Jersey. Incidence of heavy GREENBUG infestations on sorghum increased in western Kansas and southeast Colorado; ranged light to heavy in southwest Missouri. (pp. 551-553).

FALL ARMYWORM moderate to heavy on corn or sorghum in some Southern States; economic in many pastures in Mississippi and poses threat to pastures, soybeans, and forage crops in Arkansas. (pp. 554, 555, 557).

GREEN CLOVERWORM problem or threat to soybeans in several States. MEXICAN BEAN BEETLE increased on soybeans in eastern Maryland and Virginia. (pp. 556, 557).

EUROPEAN CORN BORER problem in peppers in New Jersey and Michigan. (pp. 557-558).

CABBAGE LOOPER heavy on cole crops in central Willamette Valley of Oregon. (p. 558).

Detection

ASPARAGUS APHID reported for first time in Massachusetts. (p. 559).

For new county records see page 564.

Reports in this issue are for the week ending August 10 unless otherwise indicated.

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NATIONAL WEATHER SERVICE'S 30-DAY OUTLOOK

MID-AUGUST TO MID-SEPTEMBER 1973

The National Weather Service's 30-day outlook for mid-August to mid-September is for temperatures to average below seasonal normals from the central and southern Great Plains through the Southeast as well as along the central and south Pacific coast and in eastern portions of the central Plateau. Above normal temperatures are indicated for the northern border States, the Northeast, and much of the Northwest. Elsewhere near normal temperatures are in prospect. Rainfall is expected to exceed normal from the Mississippi Valley to the Appalachians and in New England. Subnormal totals are indicated for the southwest quarter of the Nation. In unspecified areas near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ASTER LEAFHOPPER (*Macrosteles fascifrons*) - MICHIGAN - Ranged moderate to heavy in Stockbridge area, Ingham County. Celery, lettuce, carrot, and onion growers should continue spray programs. Young lettuce and celery plants most susceptible to disease. (Cress). FLORIDA - Adults averaged 17 per 100 sweeps of blooming alfalfa at Gainesville, Alachua County. (Fla. Coop. Sur.).

ARMYWORM (*Pseudaletia unipuncta*) - MINNESOTA - Situation stabilized (see CEIR 23(32):527). Although isolated infestations with severe damage and losses occurred, overall losses not as heavy as in past years. Most larvae now pupated or about to pupate. Not much damage by second generation expected as most susceptible crops will be too advanced. (Minn. Pest Rpt.). WISCONSIN - Seriously damaged oats in parts of Lincoln County. Infested 400+ acres, up to 90 percent of heads clipped off in some fields. (Wis. Ins. Sur.).

CORN EARWORM (*Heliothis zea*) - NEW JERSEY - Required treatment every 2-3 days on sweet corn in many southern county plantings. *S. frugiperda* (fall armyworm) population and injury increased. Scheduled treatments for *H. zea* will control armyworms, young plantings should be checked for feeding injury. (Ins.-Dis. Newsltr.). TENNESSEE - *H. zea* and *Spodoptera ornithogalli* (yellowstriped armyworm) fed heavily on whorls of late-planted corn in many central area fields. Larvae very light in whorls. (Gordon, Bruer). FLORIDA - *H. zea* averaged 14 per 100 sweeps of blooming alfalfa at Gainesville, Alachua County. (Fla. Coop. Sur.). MISSISSIPPI - Damaged buds on 50 acres of sorghum in Copiah County. (Ray). Larvae averaged one per 5 row feet in Yalobusha County sorghum. (Varner). Infested 100 percent of 30 acres of silage corn in Noxubee County. (Robinson). ARKANSAS - *H. zea* and *Celama sorghiella* (sorghum webworm) still light in grain sorghum in all areas except extreme northeast area where none or very light populations noted. (Boyer).

ILLINOIS - Second-generation *H. zea* larvae very abundant in field corn in southern third of State; 90+ percent of fields checked had at least 5-percent infestation in ear tips; field in St. Clair County had 90-percent infestation with average of 1.4 larvae per ear. Average infestation for area 30 percent, with St. Clair and Randolph Counties having heaviest infestations. (Ill. Ins. Rpt.). KANSAS - Recent light trap catches indicate large numbers of moths flying in Brown and Republic Counties. (Bell).

OKLAHOMA - *H. zea* and *Spodoptera frugiperda* (fall armyworm) moderate to heavy in sorghum terminals in Craig, Rogers, Cotton, Washita, Custer, and Atoka Counties. *H. zea* ranged 1-5 per head in 64 percent of heads in Wagoner County sorghum field, heavy in Bryan County. Averaged 19 per 10 sweeps in alfalfa checked in Muskogee County. Ranged 5-15 per row foot in 5 peanut fields checked in Marshall County; foliage damage ranged 10-50 percent; ranged 1-2 per row foot in Hughes County and 3-4 per foot in Caddo County. Heavy damage by *H. zea* and other foliage feeders reported in Bryan County peanuts. *H. zea* very light in scattered fields of soybeans checked in east-central area. (Okla. Coop. Sur.). UTAH - *H. zea* moderately damaged sweet corn in Cache County. (Burtenshaw). CALIFORNIA - Larvae damaged field corn at Olivehurst, Yuba County. Larvae damaged zinnia flowers in cut flower planting in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

CORN LEAF APHID (Rhopalosiphum maidis) - MAINE - Increased rapidly on corn. Some tassels completely covered. Later corn also infested. Heaviest infestation in west-central area. Field near East Corinth, Penobscot County, had less than one percent of larvae parasitized and about 5 percent showed signs of fungus disease or were dead. No treatments advised because many aphids in protected areas of plants and relief would be temporary. Controls difficult because aphids under sheaths and in whorls. (Gall). NEW JERSEY - Increased in scattered blocks of sweet corn. No real problem expected if properly treated. (Ins.-Dis. Newsltr.). MARYLAND - Populations declined on sweet and field corn in most sections. Infestations this season much above normal on Eastern Shore. (U. Md., Ent. Dept.).

OHIO - Heaviest R. maidis infestations to date on corn observed in Wyandot and Mercer Counties. About 25 percent of tassels examined in one sweet corn field in each county with blackened appearance due to heavy infestations. Aphids fed around silk region of corn ears in these fields. About one-third of infested plants in Mercer County field dying. (Fox). ILLINOIS - Heavy enough on corn to warrant treatment in several fields in Woodford County. Very heavy infestation reported in Ogle County cornfield. (Ill. Ins. Rpt.). WISCONSIN - Still moderate in most cornfields. Heavy on occasional plant or field. (Wis. Ins. Sur.).

KANSAS - R. maidis continued to decline on sorghum as more fields reach boot stage and beyond; most fields have trace to light infestations. (Bell). OKLAHOMA - Scattered, heavy infestations reported in sorghum in west-central counties and in Cotton County. (Okla. Coop. Sur.). ARIZONA - Moderate in boots of sorghum in Cochise and Graham Counties. Beneficial species also plentiful in boots. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis graminum) - KANSAS - Incidence of heavy infestations increased in sorghum 24 inches tall to milk stage throughout western area although not yet economic in most fields. In fields surveyed in west-central and northwest districts, averaged about 600 to 800 per plant overall. Parasitism by Lysiphlebus testaceipes (a braconid wasp) remained very light in area, thus more fields will probably require treatment as greenbug continues to build up. Heavy lady beetle populations in some northwest district fields giving some control or at least slowing down rate of increase. Greenbug increasing in sorghum in Rice and Reno Counties. Populations in fields of 10 to 24-inch sorghum surveyed in adjoining counties ranged 150-1,000 per plant. Economic buildups in small percentage of fields reported in southeast district. Infestations in sorghum (boot to bloom stages) in Smith County damaging in many fields; ranged 50-2,000+ per plant. However, in most fields populations declined due to heavy parasitism by L. testaceipes which had nearly destroyed light to moderate S. graminum infestations in sorghum in Mitchell and Cloud Counties southeast of Smith County. (Bell).

MISSOURI - S. graminum ranged light to heavy on sorghum in southwest area. Late-planted sorghum in area beginning to lose some of lower leaves in heavily infested fields. Lady beetles heavy in all fields checked, S. graminum populations expected to decline. (Munson). OKLAHOMA - Ranged 5-20 per sorghum plant in Cimarron County; predators kept counts light. Greenbug declined rapidly in some fields in Texas County; moderate in young 8 to 12-inch sorghum in Tulsa County. Light in all fields checked in west-central counties and in Cotton County. (Okla. Coop. Sur.).

COLORADO - Schizaphis graminum increased in untreated sorghum. Populations ranged 0-1,000 per plant and found on 100 percent of plants in some fields in southeastern counties. (Schweissing). ARIZONA - Few found on sorghum at Safford, Graham County. Beneficial species plentiful and plant growth past critical stage. (Ariz. Coop. Sur.). IDAHO - S. graminum and Macrosiphum avenae (English grain aphid) general in heads and leaves of malting barley in field margins and later maturing plants in fields in western areas of Bonneville and Jefferson Counties. All populations below economic threshold. Grain in tough-dough stage. (Wagner, Portman).

POTATO LEAFHOPPER (Empoasca fabae) - WISCONSIN - Nymphs still rather heavy in many alfalfa fields grown on sandy soils. Populations sporadic and field yellowing not indicative necessarily of heavy infestation. Stage of growth not definite criteria, some heaviest infestations found in 10-inch alfalfa and not in blossom. New seedlings seriously affected in Wood County, reduction in second alfalfa cutting expected. Up to 150 per sweep noted in some south-central area fields. Generally only 3-5 per sweep noted on heavier soiled area of southwest, ranged 20-50 per sweep on sandier soil. (Wis. Ins. Sur.). MARYLAND - Continued to increase, up to 100 per sweep, on third-growth alfalfa in central areas. (U. Md., Ent. Dept.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - INDIANA - Apteræ, mostly immatures, averaged about 12 per sweep in well-managed alfalfa field in bud stage in Vermillion County. (Meyer). NEW MEXICO - Ranged 3-25 per 25 sweeps in alfalfa in Sandoval and Bernalillo Counties. (Heninger).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - INDIANA - Egg masses averaged 2 per 300 stalks in intensively surveyed field in Tippecanoe County; most hatched, first instars dominant. Second instars and occasional third instars observed. (Sillings). Adults still present in roadsides in central districts; occasional egg mass observed in these districts. (Meyer). MICHIGAN - Second-generation moth emergence peaked. Sweet corn growers should treat on 4 to 5-day schedule until harvest. (Cress). MINNESOTA - Egg masses found only in south-central district. First generation nearing end of cycle and some moth emergence appeared in most districts. Moth catches light in light traps except at Shakopee (53) and Lamberton (220). (Minn. Pest Rpt.). KANSAS - Blacklight trap moth catches increased in Republic County but declined in Brown County. (Bell). ILLINOIS - Second-generation feeding found as far north as Whiteside County where several first-instar larvae found on ears. Fourth-instar larvae found in Randolph County. (Ill. Ins. Rpt.).

MARYLAND - O. nubilalis stalk and ear infestations increased in all areas. Sweet corn growers on Eastern Shore consider pest most difficult to control. (U. Md., Ent. Dept.). DELAWARE - Adults decreased in blacklight traps, egg mass counts on corn averaged 1 per 40 plants in Sussex County. (Burbutis, Davis). MAINE - Infestations in scattered fields in central and southern areas ranged 5-100 percent. In field near Dexter, Penobscot County, noted in every tassel, 50 percent dead. Up to 7 attacks per plant found, none survived, cause unknown. Only one larva found below upper internode. (Gall).

FALL ARMYWORM (Spodoptera frugiperda) - MISSOURI - Larvae moderate to heavy in late-planted corn and sorghum in southern and western areas. Field of late corn in central area had 100 percent of plants infested with 3-5 larvae per plant. (Huggans). Late sorghum in southwest area had 12-85 percent of plants infested with 1-3 larvae per plant. (Munson). OKLAHOMA - S. frugiperda and Heliothis zea (corn earworm) moderate to heavy in sorghum in Rogers, Washita, Custer, Cotton, and Atoka Counties. S. frugiperda appeared in young corn and sorghum in Texas County, some fields treated. Ranged light to moderate in sorghum in Marshall County. (Okla. Coop. Sur.). MISSISSIPPI - Heavily damaged 20 acres of silage corn in Noxubee County. (Robinson). GEORGIA - Moderate to heavy on sorghum in Spalding County. (Tippins).

WESTERN BEAN CUTWORM (Loxagrotis albicosta) - KANSAS - Moth catches in blacklight traps continued to increase in Greeley and Thomas Counties. Recent catch in Greeley County much heavier than peak in 1972. First and second-instar larvae found on corn surveyed in Wichita, Logan, Scott, Sherman, and Cheyenne Counties. Egg masses found in Sherman and Cheyenne Counties. Less than 10 percent of plants infested except in Sherman and Cheyenne Counties where up to 25 percent infested. Larvae fed on silks and on shucks behind ears. (Bell).

CORN ROOTWORMS: (Diabrotica spp.) - MINNESOTA - State survey nearing completion. D. longicornis (northern corn rootworm) outnumbered D. virgifera (western corn rootworm) in southwest district; this is reversal of situation in recent years. Diabrotica spp. counts light to absent in some counties, heavy in others. D. longicornis averaged 80,368 and D. virgifera 62,290 per acre in Dakota County cornfield. Diabrotica spp. adults averaged 6.2 per plant in Murray County. (Minn. Pest Rpt.). WISCONSIN - Diabrotica spp. adults still light in most fields. One recently transformed beetle found in untreated soil in Rock County. Much dispersal evident, counts in heavier infested fields much lighter this period. D. virgifera (western corn rootworm) still dominant in southwestern counties. Averaged 2 per silk in one field near Highland, Iowa County, some lodging noted in portion of field. (Wis. Ins. Sur.). INDIANA - D. longicornis and/or D. virgifera adults present in nearly all of 40 fields of corn for grain in Kosciusko County. Most counts averaged 25 per 100 stalks, but few fields averaged 6 adults per stalk. In Clinton County, 27 of 36 fields of corn for grain had few or no adults; counts noneconomic in rest of fields, mostly D. longicornis. (Anderson).

WESTERN CORN ROOTWORM (Diabrotica virgifera) - UTAH - Damage to corn in Cache and Box Elder Counties varied; conspicuous in some field and home garden corn. (Knowlton). Treatments applied to 3,000 acres in Cache County; areas not treated were damaged. (Burtenshaw). KANSAS - Adult populations in corn in west-central and northwest districts declined; much adult treatment made in northwest area past 14 days but treating declined sharply this period. (Bell). NORTH DAKOTA - Up to 6 adults per plant noted in Richland County cornfield. (McBride). MICHIGAN - Adults collected from field corn in Moscow Township, Hillsdale County, August 3 by D. Kaiser and M. Montei. Confirmed by R.J. Sauer. This is a new county record. (Sauer).

NORTHERN CORN ROOTWORM (Diabrotica longicornis) - OHIO - Adult infestations detected on corn by county: Mercer 0-5 (average 2) per silk; Tuscarawas 0-4 (average 1.8) per silk; Wyandot 0-3 (average 0.9) per silk; Putnam 15-21 per 50 plants, average 0.4 per silk; Darke 0-2 (average 0.1) per silk; no adults observed in Paulding, Van Wert, or Hancock Counties. (Fox). MARYLAND - Adults ranged 1-3 per silk in 10 acres of field corn near Keymar, Carroll County. (U. Md., Ent. Dept.).

SMALL GRAINS

HESSIAN FLY (Mayetiola destructor) - ILLINOIS - Populations on wheat stubble light again this year; averaged 2.2 puparia per 100 tillers for 10 counts surveyed. Wayne County had heaviest average of 8.8 puparia per 100 tillers. Fly counts heaviest in southwest and southeast districts. (Ill. Ins. Rpt.).

TURF, PASTURES, RANGELAND

FALL ARMYWORM (Spodoptera frugiperda) - MISSISSIPPI - Economic in many pastures in counties bordering Mississippi River in southern area. Infestations also noted in Wilkinson, Adams, Amite, Claiborne, Jefferson, Warren, Issaquena, Yazoo, Hinds, Rankin, and Copiah Counties. (Robinson). ARKANSAS - Abundance in all areas of State poses threat to pastures. Several reports of feeding on fescue noted in northern area. (Boyer). OKLAHOMA - Heavy in pastures and lawns in Choctaw County, moderate in pastures in Pontotoc County. (Okla. Coop. Sur.).

BLUEGRASS BILLBUG (Sphenophorus parvulus) - UTAH - Heavy on lawn at Salt Lake City, Salt Lake County. (Roberts, Burningham).

FORAGE LEGUMES

FALL ARMYWORM (Spodoptera frugiperda) - OKLAHOMA - Averaged 22 per 10 sweeps in alfalfa checked in Muskogee County. (Okla. Coop. Sur.). ARKANSAS - Still threat to forage crops in State. (Boyer).

ALFALFA WEEVIL (Hypera postica) - NEW MEXICO - Counts of 0-3 larvae and 0-3 adults per 25 sweeps persist in alfalfa at Alameda, Bernalillo County, and Corrales, Sandoval County. (Heninger). COLORADO - Larvae 0-200 per 100 sweeps in alfalfa in southeastern counties. (Schweissing). UTAH - Larvae light, counts of new adults increased in Cache County alfalfa. (Davis).

PEA LEAF WEEVIL (Sitona lineata) - WASHINGTON - Heavy notching of second-growth alfalfa foliage by new adults noted past 21 days in Pullman area of Whitman County. (Johansen).

PEA APHID (Acyrtosiphon pisum) - COLORADO - Ranged 0-600 per 100 sweeps in alfalfa, except in some fields in bloom stage where population reached 2,000 per 100 sweeps, in southeastern counties. (Schweissing).

ALFALFA SEED CHALCID (Bruchophagus rodii) - NEVADA - First-generation adults emerged in Oroville area, Humboldt County. (Stitt).

GRASSHOPPERS - MINNESOTA - Although heavy in most roadsides, feeding not very evident in field margins. Averaged 18 per square yard in field of alfalfa and 63 per square yard in nearby roadside in Chisago County; mostly Melanoplus femurrubrum. Feeding heavy in soybeans in Clay and Wilkin Counties. Soybeans setting pods; any feeding by grasshoppers on new pods will be very damaging. (Minn. Pest Rpt.). WISCONSIN - M. femurrubrum noted in grasses and weeds near crops in many sandy areas but more frequent along alfalfa fields and in many cases in the fields. Feeding damage not very noticeable. (Wis. Ins. Sur.).

SOYBEANS

GREEN CLOVERWORM (Plathypena scabra) - NEW JERSEY - Caused much injury to soybeans in central and southern counties. Also reported in Warren County. Injury caused by larvae "ragging" leaves, caused plants to grow abnormally. (Ins.-Dis. Newsltr.). DELAWARE - Larvae ranged 2-6 per row foot in New Castle County soybeans. (Bray, Rust). MARYLAND - Several hundred acres of soybeans in Kent and Talbot Counties treated. Populations declining due primarily to parasitism. (U. Md., Ent. Dept.). VIRGINIA - Up to 20 larvae per 3 row feet caused moderate to heavy foliage damage in Essex, King and Queen, King William, Richmond, Westmoreland, Lancaster, Caroline, and Middlesex Counties. Average damage seldom more than 25 percent total foliage loss, near treatment recommendation. Fifty percent foliage loss reported in some fields. (Allen).

OHIO - P. scabra eggs still hatching in southwest area; larval infestations heavier than normal and more prevalent. (Blair). INDIANA - Continued most common potentially harmful pest of soybeans through State. Averaged about 3 larvae per linear foot. All instars present, but early instars dominant in central districts; average counts ranged from 0.6 to 7.8 per linear foot. Of few late instars observed, only few parasitized; few diseased larvae seen. (Meyer). ILLINOIS - Larval infestations continued to cause concern throughout western and central areas. Larvae averaged 17 and 8 per linear foot of row in 2 Woodford County fields, with several thousand acres treated this week. All larval stages found. Estimated 15 percent of larvae found in one Woodford County field killed by fungus disease. (Ill. Ins. Rpt.). WISCONSIN - Alert in effect, especially in western side of State. Very small larvae appeared in alfalfa and soybeans in area, adults heavy in denser soybean stands. Larvae heaviest in dense stands, ranged 1-7 per row foot. Some larger larvae parasitized by tachina flies. Adult flights decreased, still in sufficient numbers to continue oviposition for next few weeks. (Wis. Ins. Sur.).

MISSOURI - P. scabra larvae heavy in scattered fields in west-central and north-central areas. Counts as high as 15-18 larvae per row foot. Counts in southwest area ranged 0-8 per row foot. (Munson). OKLAHOMA - Most common insect in soybeans checked in Tulsa, Muskogee, Wagoner, Sequoyah, and Le Flore Counties. Ranged up to 1 per row foot in occasional early planted fields. (Okla. Coop. Sur.).

FALL ARMYWORM (Spodoptera frugiperda) - ARKANSAS - Still threat to extremely late soybeans in some fields in northeast area. Infestations much heavier in grassy soybeans than in clean fields. (Boyer). MISSISSIPPI - S. frugiperda and S. ornithogalli (yellow-striped armyworm) light to heavy in 500 acres of soybeans in Issaquena County. (Robinson). ALABAMA - S. frugiperda defoliated 4 acres of 35-acre field at Heflin in Cleburne County. Treatments effective. (Thompson).

MEXICAN BEAN BEETLE (Epilachna varivestis) - MARYLAND - Second-generation larvae continued to increase in soybeans on Eastern Shore. Peak numbers expected last 14 days of August. (U. Md., Ent. Dept.). VIRGINIA - Continued to increase in Essex, Richmond, Lancaster, and Westmoreland Counties, many growers treating. Most fields below suggested threshold but may surpass them when newly emerged adults begin laying eggs. (Allen). ALABAMA - Treatments applied to soybean field in Jackson County due to defoliation by adults and larvae. (Richardson).

BEAN LEAF BEETLE (Cerotoma trifurcata) - ALABAMA - Adults severely defoliated large field in early pod stage in Dallas County. Treatments planned. (Henderson et al.).

A CERAMBYCID BEETLE (Dectes texanus texanus) - TENNESSEE - Adults collected in soybean field from cocklebur and ragweed in Lincoln County by J. Winsett and J. Cagle, and in Franklin and Coffee Counties by J. Cagle. Determined by R. Patrick. These are new county records. (Gordon, Bruer).

THREECORNERED ALFALFA HOPPER (Spissistilus festinus) - ALABAMA - Nymphs severely damaged 100+ acres of late soybeans in early pod stage at Browns, Dallas County. Nymphs and adults heavy, 1-10 per row foot and have girdled plant 1 to 5 times. Heavier in another field of no-till soybeans. (Henderson et al.).

GRASSHOPPERS - WISCONSIN - Melanoplus differentialis nymphs dispersed throughout soybean fields, especially in sandier soiled regions. Populations of 40+ per square foot not unusual along field margins, little dispersion into corn noted to date. Occasional adult noted, fifth and sixth instars predominate. (Wis. Ins. Sur.).

PEANUTS

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - OKLAHOMA - Infested plants ranged 10-68 percent in 5 peanut fields checked in Marshall County, 8-9 percent in 2 fields in Hughes County, and 5-10 percent in 2 fields in Grady County. (Okla. Coop. Sur.). ALABAMA - Larvae ranged 1-5 per 10 row feet in 10 peanut fields in Dale County. (Hubbard et al.).

GRANULATE CUTWORM (Feltia subterranea) - ALABAMA - Larvae widespread and damaged several thousand acres of peanuts in Covington and Crenshaw Counties. Lighter infestations observed in 10 Dale County fields. (Kinard et al.).

COTTON

BOLL WEEVIL (Anthonomus grandis) - GEORGIA - Incidence of punctured squares (up to 60 percent) still light in southern area. Infestation level generally correlated with control efforts. (Barry). ALABAMA - Infestations still heavy throughout south and central areas. Treatments continuous on 95-99 percent of acreage. Infestation increased in extreme northern area. (McQueen). MISSISSIPPI - Most fields in "hills" and southern area on weevil schedule. Infestation light in Delta counties, many acres not yet treated. (Robinson). ARKANSAS - Infestations increased in some areas. Generally much below normal. (Boyer). OKLAHOMA - Punctured square counts ranged up to 30 percent in some fields in Caddo County, 0-19 percent in southwest counties. Light in Grady and Garvin Counties. Second-generation adult emergence should begin next few days in Bryan County. (Okla. Coop. Sur.).

BOLLWORMS (Heliothis spp.) - OKLAHOMA - Small H. zea (bollworm) larvae in terminals ranged up to 20 percent in Caddo and Kiowa Counties, 2-16 percent in Cotton and Jackson Counties. Damaged squares ranged 10-15 percent in Marshall County, averaged 10 percent in Tillman County. Eggs light in Jackson and Bryan Counties but larvae heavy in untreated fields in Bryan, Muskogee, and Wagoner Counties. (Okla. Coop. Sur.). ARKANSAS - H. zea and H. virescens (tobacco budworm) lighter than average for time of year. Sugarline and light trap reports show adult flights quite variable over State and generally rather light. (Boyer). MISSISSIPPI - H. zea and H. virescens in about equal numbers in cotton before treatment. After treatment, H. virescens ranged 75-90 percent in Coahoma, Bolivar, Tunica, and Tallahatchie Counties. Infestations mostly light for time of year. (Robinson).

ALABAMA - Heliothis spp. larvae heavy and damaging in many fields in Lee, Russell, Cullman, Covington, Crenshaw, and Houston Counties. Controls difficult. (McQueen). GEORGIA - Second-generation larvae heavy in most southern area fields and treatments required, adequate control usually obtained. H. virescens still dominant species. (Barry).

CABBAGE LOOPER (Trichoplusia ni) - GEORGIA - Treatments needed in some southern area cotton fields with little or no incidence of diseased loopers. Several dead adults in one field parasitized by a polyembryonic wasp. (Barry).

TARNISHED PLANT BUG (Lygus lineolatus) - ALABAMA - Damaging infestations still reported in untreated cotton in northern area in Lawrence, Limestone, Madison, Calhoun, Marshall, and Morgan Counties. Most growers applied controls. (McQueen).

MISCELLANEOUS FIELD CROPS

REDBACKED CUTWORM (Euxoa ochrogaster) - OREGON - Adults very heavy in some Jefferson County mint plantings; also heavy during harvest operations. Females collected and dissected were full of eggs. (Berry).

POTATOES, TOMATOES, PEPPERS

EUROPEAN CORN BORER (Ostrinia nubilalis) - NEW JERSEY - This species and Myzus persicae (green peach aphid) required controls on peppers in most southern and central county plantings. Five

to seven-day treatment schedule warranted. Continued, hot, dry weather will probably intensify problem. (Ins.-Dis. Newsltr.). MICHIGAN - Second-generation moth emergence peaked. Pepper growers should maintain 3 to 4-day spray schedule for remainder of season. (Cress).

ALFALFA LOOPER (*Autographa californica*) - OREGON - Larvae averaged 8 per 25 sweeps throughout 60-acre potato planting near Wilsonville, Washington County; 3-5 larvae in some hills. Damage mainly restricted to lower leaves. (Collins).

CABBAGE LOOPER (*Trichoplusia ni*) - NEVADA - Various larval instars averaged 3 per linear foot on 200 acres of potatoes at Dutch Flat, Humboldt County. (Rowe).

GREEN PEACH APHID (*Myzus persicae*) - OREGON - Alates appeared along borders of potato plantings in Washington County from Aurora to Scholls. Alates most abundant in borders lined by trees. Treatments applied to some small fields. (Collins). MICHIGAN - Ranged light to moderate in all potato fields in Allegan County. (Cress).

COLE CROPS

CABBAGE LOOPER (*Trichoplusia ni*) - OREGON - Population levels heavy in central Willamette Valley. Cole crop growers, particularly of broccoli, experiencing difficulty in maintaining control. Catches from pheromone trap at Corvallis, Benton County, revealed heavy numbers of adults during past 14 days. Totals as follows: 58 July 31-August 1; 57 August 4-8. (Hay, Crowell).

WESTERN SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata undecimpunctata*) - OREGON - Adults ranged 2-3 per 10 plants on recently transplanted broccoli and caused heavy feeding damage to 40-acre planting near Banks, Washington County. Treatment required. (Collins).

GENERAL VEGETABLES

ASPARAGUS APHID (*Brachycolus asparagi*) - MASSACHUSETTS - Fed on asparagus in greenhouse at Amherst, Hampshire County. Collected November 2, 1972, by J.L. Capinera. Determined by L.M. Russell. This is a new State record. Currently infested large number of asparagus plantings in Franklin County planting; however, no damage visible yet. This is a new county record. (Capinera).

DECIDUOUS FRUITS AND NUTS

VARIEGATED CUTWORM (Peridroma saucia) - CALIFORNIA - Larvae damaged cherry fruit and leaves locally in Yreka, Siskiyou County. Species has been fruit tree problem more this year than in past years. (Cal. Coop. Rpt.).

CODLING MOTH (Laspeyresia pomonella) - MICHIGAN - Second-generation emergence rapidly approaching peak. Pheromone trap catches exceeded 50-75 moths per trap. (Thompson).

REDBANDED LEAFROLLER (Argyrotaenia velutinana) - MAINE - Second brood hatching. This brood feeds on apples and of some concern. (Gall).

APPLE MAGGOT (Rhagoletis pomonella) - MICHIGAN - Adults heavy statewide; often too numerous to count. Deformed, misshapened, and dimpled fruits that contain visible larval infestations common on early summer apple varieties. (Thompson).

EUROPEAN RED MITE (Panonychus ulmi) - NEW JERSEY - Increased in many commercial blocks. Continued hot, dry weather expected to intensify problem. (Ins.-Dis. Newsltr.).

WALNUT CATERPILLAR (Datana integerrima) - GEORGIA - Heavy on pecan trees in Coweta and Spalding Counties. (Hamilton, Tippins).

ORNAMENTALS

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - KANSAS - Significant damage reported in pine Christmas tree plantings in Reno County. (Bell).

CALIFORNIA TORTOISESHELL (Nymphalis californica) - CALIFORNIA - Second-generation larvae severely defoliated shrubs, mostly ceanothus, in Placer County. First generation defoliated several thousand acres of native brush. Adult flights very limited compared to 1972 when millions of adults were nuisance and hazard. (Cal. Coop. Rpt.).

MIMOSA WEBWORM (Homadaula anisocentra) - MARYLAND - Severe on mimosa and honeylocust Statewide. (U. Md., Ent. Dept.). ALABAMA - Larvae folding, webbing, and destroying much of foliage of mimosa and honeylocust statewide. (McQueen). MISSISSIPPI - Severe on mimosa throughout State. Seriously weakened some trees, contributing factor in death of others. (Robinson).

HOLLYHOCK WEEVIL (Apion longirostre) - NEW MEXICO - Collected in Santa Fe, Santa Fe County, and Los Alamos, Los Alamos County. These are new county records. (N.M. Coop. Rpt.).

EUROPEAN EARWIG (Forficula auricularia) - NEW MEXICO - Recovered from heavy grass and other vegetation in Los Alamos, Los Alamos County. This is a new county record. (N.M. Coop. Rpt.).

FOREST AND SHADE TREES

FALL WEBWORM (Hyphantria cunea) - WEST VIRGINIA - Nests ranged 15-20 per tree on oaks, wild cherry, and dogwood over 300-acre area in Greenbrier County and 2-12 per tree on sourwood, cherry, hickory, locust, apple, and walnut in Raleigh, Mercer, and Summers Counties. (Leonard, Faulk).

WHITEMARKED TUSsock Moth (Hemerocampa leucostigma) - WEST VIRGINIA - Larvae noted on Damson plum in Raleigh County, August 5, 1973. Collected and determined by C.C. Coffman. This is a new county record. (Coffman).

ELM LEAF BEETLE (Pyrrhalta luteola) - ALABAMA - Completely defoliated numerous elms along streets of Lee, Tallapoosa, Dallas, Elmore, Pike, and Montgomery Counties. Believed present in other counties. (McQueen). KANSAS - Foliar damage to Siberian elms primarily by second-generation larvae generally severe in urban areas of Reno, Ellis, Barton, Russell, and Rush Counties. (Bell). CALIFORNIA - Continued to defoliate elm trees in many locations in Sacramento Valley. Noticeable individual tree susceptibility occurred in street trees. (Cal. Coop. Rpt.).

WHITE PINE WEEVIL (Pissodes strobi) - RHODE ISLAND - Infested pines and spruces in nursery stock and home plantings statewide. Incidence apparently heaviest since 1967. (Relli, Aug. 3).

MAN AND ANIMALS

SCREWWORM (Cochliomyia hominivorax) - A total of 334 confirmed cases were reported in continental U.S. during period July 29-August 4 as follows: Texas 136, New Mexico 53, Arizona 143, California 2. Total of 735 cases confirmed from Mexico. Number of sterile flies released this period totaled 125,611,800 as follows: Texas 82,811,400; New Mexico 11,637,000; Arizona 29,489,400; California 1,674,000. Total of 35,051,400 sterile flies released in Mexico. (Anim. Health).

FACE FLY (Musca autumnalis) - MISSISSIPPI - Averaged 10 per face on cattle in Monroe and Chickasaw Counties. (Robinson). OHIO - Counts exceeded 35 per face on untreated beef and dairy cattle in Marion, Miami, Fayette, and Knox Counties. (Fox). INDIANA - Counts on 5 bulls in Tippecanoe County for 4 days during week ending August 5 averaged 5 (range 0-30) and 5 days during week ending August 10 averaged 7 (range 0-30). Counts on 9 steers in county for same periods averaged 8.6 (range 0-40) and 10.4 (range 0-35) respectively. (Christensen). WISCONSIN - Populations variable. Heavy in parts of Dane, Walworth, and Bayfield Counties. Pinkeye reported in area of Dane County. (Wis. Ins. Sur.). IOWA - Ranged 0-150 (averaged 21) per head on Story County beef cattle. (DeWitt). UTAH - Annoyed cattle and horses in parts of Salt Lake, Weber, and Cache Counties. (Knowlton).

MOSQUITOES - OHIO - Larval collection in vicinity of Worthington Hills, Franklin County, contained Culex pipiens pipiens, Aedes vexans, A. trivittatus, and Anopheles punctipennis. C. pipiens pipiens and Aedes vexans most numerous. (Ohio Dept. Health). WISCONSIN - Varied at different locations. Increased slightly in some northern areas probably due to recent rains. Hot weather favored activity. (Wis. Ins. Sur.). MINNESOTA - Trap counts in Metropolitan Mosquito Control District lowest since June 1; total

of 3,195 female mosquitoes taken in 16 traps. Aedes vexans accounted for 56 percent of catch, Coquillettidia perturbans 37 percent. In 485 larval collections, 71 percent contained A. vexans, 6 percent Culex tarsalis. A. vexans dominant in evening and day-time bite collections; A. stimulans, A. excrucians, and C. perturbans well represented. Rains past weekend very variable, very light larval brood of A. vexans present. (Minn. Pest Rpt.). UTAH - Mainly Aedes dorsalis very annoying in most of Curlew Valley, Box Elder County, and extremely heavy in Locomotive Springs and a watering place near Wildcat Hills. Annoyance continued over most Rich and Cache County farmlands and near communities and in areas near Price, Carbon County. (Knowlton).

HORN FLY (Haematobia irritans) - IOWA - Ranged 50-250 (average 92) per head on Story County beef cattle. (DeWitt). OKLAHOMA - Heavy on cattle in Adair, Comanche, Cotton, Garvin, and Marshall Counties; moderate in Pawnee, Craig, and Hughes Counties. (Okla. Coop. Sur.).

STABLE FLY (Stomoxys calcitrans) - WISCONSIN - Light to moderate in all areas, annoyance to cattle appreciable on hotter days. Annoyance to humans noted in Jackson County campgrounds past weekend. (Wis. Ins. Sur.). IOWA - Ranged 2-22 (average 8) per leg on untreated dairy cattle in Polk County. (DeWitt).

HOUSE FLY (Musca domestica) - WISCONSIN - Populations variable. Moderate on dairy farms in Chippewa and Rock Counties. Heavy near residences in several scattered areas. (Wis. Ins. Sur.).

HORSE FLIES (Tabanus spp.) - OKLAHOMA - Heavy and annoyed cattle in Cotton and Bryan Counties. (Okla. Coop. Sur.).

BENEFICIAL INSECTS

A CHALCID WASP (Brachymeria intermedia) - VIRGINIA - Released 1,000 adults in Spruce Knob area of Pendleton County for control of Calocalpe undulata (a geometrid moth). Released 500 adults near Thornwood, Pocahontas County, for control of Heterocampa guttivitta (saddled prominent). Releases made by J.D. Hacker (Hacker).

AN ENCYRTID WASP (Aphelinus mali) - WASHINGTON - Parasitism of Eriosoma lanigerum (woolly apple aphid) by this wasp very heavy, 94+ percent, in unsprayed apple orchard block at East Wenatchee, Douglas County. (Hogt).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - PENNSYLVANIA - Immatures collected from oats at Mount Pleasant, Adams County, June 6, 1973, by S.S. Maxwell. Determined by R.E. White. This is a new county record. (PPQ).

GRASSHOPPERS - NORTH DAKOTA - Adult survey in Cass County showed infestation decrease from 1972. Roadsides and field margins ranged up to 15 (average 3) per square yard while field infestations ranged up to 8 (average 2) per square yard. Alfalfa only crop with economic field infestations. Light infestations in southeast and northeast portions of county. Melanoplus bivittatus dominant species. (Brandvik). IDAHO - Mainly M. sanguinipes, M. foedus, M. bivittatus, and Hesperotettix sp. ranged up to 200 per square yard

in phosphate strip mining rangeland east of Blackfoot, Bingham County, egg laying underway. M. sanguinipes, M. bivittatus, and Oedaleonotus enigma ranged up to 50 per square yard in margins of Bonneville County alfalfa fields, 8 miles east of Idaho Falls. (Wagner et al.). UTAH - Grasshoppers moved into alfalfa from rangelands in many localities. Significant injury occurred in Davis and Salt Lake Counties. (Knowlton, Burningham). NEVADA - Camnula pellucida, Melanoplus bivittatus, and M. sanguinipes ranged up to 20 per square yard on 1,300 acres of nontilled land formerly in alfalfa and in alfalfa-grain in Newark Valley, White Pine County. (Giles).

GYPSY MOTH (Porthetria dispar) - PENNSYLVANIA - Total of 856,710 acres of forest defoliated during 1973 compared to 404,060 acres in 1972. In 1973, defoliation moderate on 181,775 acres and heavy on 674,935 acres in 18 counties. Defoliation light in 5 other counties. Populations collapsed in some areas due to several factors. During period May 4 through July 6 total of 31,984 parasites released in Schuylkill, Berks, Lebanon, Pike, Luzerne, and Dauphin Counties. These included Brachymeria intermedia (a chalcid wasp); Apanteles melanoscelus, A. porthetriae, and Meteorus pulchricornis (braconid wasps); Pimpla turionellae (an ichneumon wasp); and Exorista larvarum and Palexorista sp. (tachina flies). (Pa. For. Pest Rpt., July).

JAPANESE BEETLE (Popillia japonica) - MARYLAND - Adults continued to damage ornamentals locally. Heavy and laying eggs in lawns in southern Prince Georges County. (U. Md., Ent. Dept.). TENNESSEE - Late adult emergence occurred in Johnson County. Population very heavy in some areas. (Hammett).

RANGE CATERPILLAR (Hemileuca oliviae) - NEW MEXICO - About 85,000 acres treated on private contract in Harding County. (N.M. Coop. Rpt.).

WHITEFRINGED BEETLES (Graphognathus spp.) - VIRGINIA - Adults moderate in previously infested Pittsylvania County tobacco fields. Some damage occurred in newly planted tobacco seedlings earlier in growing season. (Jones, August 3). FLORIDA - Adults heavily infested unspecified acreage of soybeans in Liberty County. (Fla. Coop. Sur.). ALABAMA - Adults about one per 2-10 row feet in all 10 peanut fields in various parts of Dale County; leaf feeding evident. (Hubbard et al.).

HAWAII INSECT REPORT

Corn - CORN EARWORM (*Heliothis zea*) severe on sweet corn at Pupukea, Oahu; one or more early larvae in 100 percent of mature ears. Control usually curtailed at this location 2 weeks prior to harvest. (Kawamura).

General Vegetables - PEPPER WEEVIL (*Anthonomus eugeniei*) light on sweet peppers at Whitmore Village, Oahu; adults and larvae in less than 5 percent of fruits. GREENHOUSE WHITEFLY (*Trialeurodes vaporariorum*) adults generally light on bitter melon at Haleiwa, Oahu; heavy on terminal 3-5 leaves. All stages moderate to heavy on same crop at Pupukea. Larval mines of LEAFMINER FLIES (*Liriomyza* spp.) heavy in mature greenhouse tomatoes at Pupukea; light on nearby younger plants. OHION THRIPS (*Thrips tabaci*) light on lettuce and horensa (*Spinacia oleracea*) at Waimanalo, Oahu; less than one nymph or adult per leaf in both plantings. (Kawamura).

Fruits and Nuts - COCONUT SCALE (*Aspidiotus destructor*) colonies spotty and light on older leaves in small banana planting at Pearl City, Oahu. Larvae and adults of *Telsimia nitida* and *Lindorus lophanthae* (lady beetles) light on scale infested leaves. *A. destructor* light on 30 coconut trees at Waimanalo; lady beetle larvae light. (Otsuka, Kawamura). Damage by COCONUT LEAFROLLER (*Hedylepta blackburni*) to 1,000+ coconut trees in resort area at Kahuku, Oahu, still heavy. All but youngest 2-3 fronds of most trees adversely affected. (Kawamura).

Man and Animals - Mosquito collections during July from 57 light traps operated on Oahu totaled 3,189 *Culex pipiens quinque-maculatus* and 432 *Aedes vexans nocturnus*. *Aedes* catches ranged from zero to high of 168 at Kahaluu. *Culex* catches ranged from zero to high of 1,712 at Kawaiiloa. (Mosq. Control Br., State Dept. Health).

DETECTION

New State Records - ASPARAGUS APHID (*Brachycolus asparagi*) - MASSACHUSETTS - Hampshire County. (p. 559).

New County Records - ASPARAGUS APHID (*Brachycolus asparagi*) MASSACHUSETTS - Franklin (p. 559). A CERAMBYCID BEETLE (*Dectes texanus texanus*) TENNESSEE - Lincoln, Franklin, Coffee (p. 557). CEREAL LEAF BEETLE (*Oulema melanopus*) PENNSYLVANIA - Adams (p. 562). EUROPEAN EARWIG (*Forficula auricularia*) NEW MEXICO - Los Alamos (p. 560). HOLLYHOCK WEEVIL (*Apion longirostre*) NEW MEXICO - Santa Fe, Los Alamos (p. 560). WESTERN CORN ROOTWORM (*Diabrotica virgifera*) MICHIGAN - Hillsdale (p. 554). WHITEMARKED TUSsock MOTH (*Hemerocampa leucostigma*) WEST VIRGINIA - Raleigh (p. 516).

CORRECTIONS

CEIR 23(32):540 - EUROPEAN CHAFER (*Amphimallon majalis*) - OHIO - Delete "Treatment applied."

LIGHT TRAP COLLECTIONS

LIGHT TRAP COLLECTIONS				Temperature (° F)	Precipitation (inches)	Type of trap	DL - blacklight UV - mercury vapor O - other	Agrotis ipsilon (black cutworm)	Scaphura aceris (cutworm)	Euxoa auxiliaris (army cutworm)	Parotia diffusa (wooly bear)	Pectis radiata (grain cutworm)	Pectis squalens (grain cutworm)	Heliothis virescens (tobacco budworm)	B. zea (bollworm, corn earworm, tomato, fruitworm)	Lamprolaima homocidus (coddling moth)	Loxostege compositella (alfalfa cutworm)	Loxostege ornithogalli (cabbage looper)	Loxostege sticticalis (beet webworm)	Kennerly quinquefasciata (tomato hornworm)	Kennerly sexta (cabbage looper)	Ortisia mobilis (European corn borer)	Perithous nigrus (parasitic wasp)	Phaenocarpa notivicta (parasitic wasp)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Spodoptera ornithogalli (cabbage looper)	Trichoplusia ni (cabbage looper)		
ARKANSAS (Counties) Chicot 8/1-6 Lee 8/2-8						BL BL						5	18 47																	
FLORIDA Gainesville 8/3-9						BL		1			4			3	22															
IOWA Gilbert 7/27-8/2						BL		11		6											100			5	6					
KANSAS Goodland 8/3,6 Tribune 7/30, 8/2						BL BL				139 766					6									4	5					1
MICHIGAN (Counties) Lenawee 7/31-8/6 Monroe 7/31-8/6						BL BL															469 652									
MINNESOTA Crookston 8/2-8 Fergus Falls 8/2-8						BL BL															3 15									3
MISSISSIPPI Washington 8/3-9				62-92	None	2BL		5			8			5	73						3			3	280	14	229	346	148	
MISSOURI Portageville 8/3-9								10								21								6						
NEW JERSEY Evesboro 8/1-7 Seabrook 8/1-7						7BL 5BL		9 13							1 6															
NORTH DAKOTA Bismarck 8/3,8 Bottineau 8/3,6						BL BL																								
OHIO Wooster 8/3-9						BL		27		10																				

LIGHT TRAP COLLECTIONS

Locality	Specimen	Altitude (feet)	Type of trap	Temperature (°F)	Wind direction	Wind velocity (m.p.h.)	Relative humidity (%)	Time of day	Time of year	Crops									
OREGON (Counties) Jefferson 8/2-8 Marion 8/2-8	2BL	46	2BL																
	2BL	25																	
PENNSYLVANIA (District) Central 7/30-8/7 Northeast 7/30-8/7	BL	91	BL																
	BL	27	BL																
TENNESSEE (Counties) Gibson 8/6-10 Madison 8/6-10	BL	119	BL																
	BL	17	BL																
VIRGINIA Painter 7/31-8/7 Warsaw 7/31-8/7	BL		BL																
	BL		BL																
WEST VIRGINIA (Counties) Rawahna 8/7 Monroe 8/7	BL	2	BL																
	BL	2	BL																
WISCONSIN Lancaster 8/1-6 Mazomanie 8/1-7	BL		BL																
	BL	1	BL																

WEATHER OF THE WEEK ENDING AUGUST 13

Reprinted from Weekly Weather and Crop Bulletin supplied by Environmental Data Service, NOAA.

HIGHLIGHTS: Normal temperature and rainfall ruled over all but a few areas in the Nation. The Northeast suffered a late week heat wave which broke records in the mid-Atlantic States. A wave of Canadian air invaded the Rockies and Plains on Monday sending some locations into the 40's and 30's the next few days. Cold air moved east and south. It generated some spectacular local downpours.

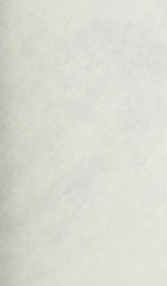
PRECIPITATION: Rainfall averaged within 0.50 inch of normal almost everywhere in the Nation last week--exception was the South. Parts of Florida got from 1 to 1.50 inches above norm. Parts of western Georgia and the Carolinas remained unusually dry. From the Rockies west, virtually no rain fell. Throughout the northern Plains and the Corn Belt some drenching rains were mostly associated with a stalled front which became quasi-stationary Tuesday when it extended through the Dakotas into Wyoming. It moved slowly all week extending through Indiana into Kentucky late Sunday. Monday, rains fell along a front that stretched through the Carolinas into the Atlantic. Heavy flooding hit near Boone, North Carolina, where a highway lay under 3 to 4 feet of water. Early Monday, invading cold Canadian air caused hail in South Dakota and Minnesota. Tuesday, a front generated thunderstorms and severe weather from southwest Iowa to northeast Kansas. One storm left 1.10 inches of rain at Randolph, Iowa, in 45 minutes. Another dumped 2.81 inches of rain on Baileyville, Kansas, in 1.5 hours. Salina, Kansas, also recorded 63 m.p.h. winds. Late Tuesday, a group of cities and towns all within a 100-mile diameter had spectacular rains. Horton, Kansas, 5.20 inches, St. Joseph, Missouri, 3.75 inches, Oregon, Missouri, 4.75 inches, and Clarinda, Iowa, 2.30 inches. As the front meandered east, it touched off local severe weather. Golf ball size hail hit Lovewell Dam, Kansas, in 80 m.p.h. winds Wednesday. A 3-inch rain struck just north of Wichita, Kansas, Thursday night. Friday, thunderstorms were scattered. Topeka, Kansas, got the most evening rain--1.52 inches Friday and Saturday morning. Miami, Florida, recorded 2.33 inches of rain later Saturday, the Tampa area 1.90 inches. Sunday, most of the Nation enjoyed fair weather; thundershowers roamed the Gulf Coast, the Tennessee Valley, and New England.

TEMPERATURE: While most of the Nation averaged within 3 degrees of normal for the week, the Northeast suffered a heat wave, especially later in the week and over the weekend, and an invasion of cold air from Canada kept averages 6 degrees subnormal in parts of the Dakotas, Montana, and Wyoming. Monday, a large High over Alberta started to pull cold, northern air into the Nation's mid-section. As the cold air advanced, temperatures dropped. Cut Bank, Montana, fell from 47 degrees at 2 a.m. to 40 degrees at 8 a.m. Cold air embraced most of the Rockies Eastern slope and parts of the northern Plains. Tuesday morning, the Dakotas and northwestern Kansas dipped into the 40's while Montana felt the 40's. Cut Bank, Montana, recorded 37 degrees at 8 a.m. Later Tuesday, cold air slowed and the front became stationary from the upper Mississippi Valley to eastern Colorado. In the East, a massive High off the coast pumped warm air as far north as New England which averaged 6 degrees above normal for the week. Temperatures there edged into the low 90's and Boston, Massachusetts, hit 91 degrees. To the south, New York, New York, also had 91 degrees and muggy air

caused air stagnation advisories to be issued in West Virginia. Wednesday, one High kept the north-central area cool. Evanston, Wyoming, started the day at 41 degrees. The second High caused eastern temperatures to rise into the sultry 90's while a third High in the Pacific pushed readings into the 90's throughout the southern Rockies and Plains. Temperatures got most above normal in the East. Friday, Baltimore, Maryland, and Philadelphia, Pennsylvania, broke records at 95 degrees. The Philadelphia temperature was the highest so far this year. Most of the Nation baked Saturday. Garden City, Kansas, hit 100 degrees. Snow fell at Kotzebue, Alaska, on the Arctic Circle. Sunday was again hot in most places. Baltimore, Maryland; broke its record of 95 degrees; Washington, D.C., had the hottest day in 3 years--97 degrees plus a windstorm which downed large trees along the Potomac to the northwest of the Nation's capitol.



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